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and finds that they agree with the figures published by Lamouroux in showing only a *Zonaria* (the *Gymnosorus variegatus* of J. Agardh), so that the name "*Padina variegata* (Lamx.) Hauck," employed by Börgesen, would seem to be vulnerable on the ground of historical fact as well as on the ground of nomenclatural theory.

Börgeson in his general discussion of the Phaeophyceae refers to "the well-known fact that the northern brown-algal vegetation reaches a luxuriance which greatly surpasses that in the tropics." In the Faeroes he found 73 species of brown algae; in the Danish West Indies, as already remarked, the recorded number is 40.

The text of "The Marine Algae of the Danish West Indies," as may be inferred, is in English, which will render this helpful work more widely useful and more readily available to American students than might otherwise have been the case. Preliminary papers dealing with the Rhodophyceae of the Danish West Indies have already been published by Börgesen and the appearance of Part 3 of the larger work, taking up the red algae of these islands in systematic sequence, will be awaited with interest.

MARSHALL A. HOWE

#### Calkins's Biology\*

As stated in the preface, the work before us is based upon the course outlined in Sedgwick and Wilson's General Biology, and is prepared primarily for the purpose of meeting the need, felt at Columbia University, for a work along similar lines, but covering about thirty class exercises and as many laboratory periods. The course is based upon a study of types, chosen with a view to their serving "as points of departure for various lines of development in subsequent course work." The plan of the book is quite different, however, from that of Sedgwick and Wilson's text. Organisms of one cell, organisms of tissues, and organisms of organs are taken up in the order named, and "emphasis is laid at the outset on cellular activities, especially on the importance of enzymes in metabolism and development, while animal differentiation for the performance of primary functions of protoplasm is the main theme of the entire course."

\* Biology. By Gary N. Calkins, Ph.D., Professor of Protozoölogy in Columbia University. New York. Henry Holt and Company, 1914.

This last sentence fully prepares one for the preponderance of zoölogical emphasis which characterizes the book. Out of a total of nine chapters, five have to do exclusively with animal forms, and only two exclusively with plant forms. The other two (Chapters I and IX) deal with general biological matters, but out of the 25 pages of Chapter I only one and one quarter pages refer to plants, and out of 35 pages of Chapter IX, only seven refer to plants, and that only in illustration of Mendelism. Of a total of 133 pages of text, only 34 treat of plant life. The reason assigned (p. 109) for taking up the study of a fern is to facilitate tracing the food of animals, and (p. VI) the sources of animal energy. To the reviewer these reasons do not seem cogent. Could not the desired end be attained by a concise statement of not more than one or two paragraphs.

To a botanist the situation suggests the following queries: Why should a zoölogist interject into a text-book on zoölogy a chapter on the fern? Why has no botanist ever felt moved to intercalate into a text-book of botany a chapter on the earth-worm? We leave the answers to these questions to the "biologists," whose ways have always been past finding out to the botanists.

The preceding statements are intended, not primarily as a criticism of the book under review, but as a protest, which apparently needs to be continually raised, against the persistent tendency in some quarters to identify "biology" with the study of only one of the great sub-kingdoms of living things. The reviewer believes in introductory courses in general biology, provided the biology is really general; but he believes it is unfair to botany, wholly misleading to the beginning student of *biology*, and certainly no source of strength to zoölogy (though we appreciate the compliment of the opposite implication) to interrupt an otherwise logical course in zoology by sidestepping for a few days to consider the life history of the fern.

The following points will catch the eye of botanical readers:

On page 36, after noting the secretion of ferments by the salivary glands, stomach, and pancreas of animals, and that "these ferments of the digestive tract act independently of the

cells which secrete them and may act apart from such cells," the author continues: "Yeast cells on the other hand do not perceptibly secrete their alcoholic ferments in like manner but give rise to them in such minute quantities that they cannot be identified." Reynolds Green's paper of 1898, on "The alcohol-producing enzyme of yeast," described in detail experiments which led him to the conclusion that, contrary to his own statement of 1897, active yeast cells do secrete an enzyme, which is capable of causing fermentation in sugar solutions under conditions which prevent the activity of living yeast. This enzyme was called by Buchner *Zymase*, not "xymase," as in the text under review.

The specific name of the bracken fern is *aquilina*, not *acquilina* (pp. vii and 109). The "leaf of a fern is the entire aerial part" (p. 114) only in some species, not in others as, *e. g.*, *Drynaria*, *Polystichum varium* and the tree ferns generally, not to attempt a complete list. On the same page, and in one paragraph, the foliage organs of *Pteris* are referred to, in one sentence as leaves, in another sentence as stems. On page 117 occurs the persistent error that starch is manufactured by photosynthesis. The branching of the fern rhizome is considered (p. 119) to occur only "now and then," and to be "only an exceptional method of reproduction." On page 121 we are told that *at the time of spore formation* "the margins of the *mature* leaves . . . turn under," etc. On page 124 the foot of the young embryo is said to be derived from *two* of the cells of the quadrant. The origin of the root is not given.

To state (p. 107) that the nervous response of the higher plants "is limited to protoplasmic irritability," is to ignore all such common motor reactions as those of *Mimosa*, *Dionaea*, *Drosera*, and others, and the numerous and universal movements of tropistic response. On p. 29, we note "Brewer's" yeast. Throughout, *proteid* and *protein* seem to be used interchangeably. Yeast (p. 33) is stated to be, "as regards nutrition at least," intermediate between plants and animals. Spore formation in bacteria is stated to be "not a method of reproduction."

One of the commonest errors in English in scientific writing in

general is the predication of all the members of a class of that which is intended to be predicated of only a part of the class. Thus, on page 101 of the present work we read, "all living things cannot use the solar energy directly." Obviously(?), if this were true, there would be no living things to pass judgment upon other living things! But after all, that might be an advantage.

A review of the zoölogical part of the book would not be germane to a botanical journal, but we have no doubt that this portion is characterized by the same scholarly treatment that has always marked the author's zoölogical contributions.

It is often mystifying to one that other people's views do not closely agree with his own, and it is specially difficult for the reviewer to understand why, to those institutions that have departments of both botany and zoölogy, and that plan to offer courses in "general biology," it does not seem perfectly obvious, in the interest of highest efficiency, that the course should be planned by the coöperation of the two departments, the study of plant forms to be conducted in and by the department of botany, and the study of animal forms only, by the department of zoölogy. But, as the Quaker said to his wife, "Most people are peculiar except thee and me, and thee is a little peculiar."

C. STUART GAGER

**Shreve's A Montane Rain-forest\***

Many writers have called attention to the commanding influence of the great trade winds on the distribution of the West Indian flora but the present book seems to be the first to critically analyze one of the most characteristic regions in the West Indies, the Blue Mountains of Jamaica, where a wonderful rain-forest has developed on the windward side of the mountains.

After giving a general account of the physical features of the region and a discussion of its climate, together with a list of the chief species found in the rain-forest, the author begins his major problem which has been the physiological reactions of individual plants to the environmental conditions. Among this intro-

\* Shreve, F. A montane rain-forest: A contribution to the physiological plant geography of Jamaica. Publication No. 199 of Carnegie Institution of Washington. pp. 1-110. pls. 1-29 + 18 figures. Price \$1.50. Issued 12 September, 1914.